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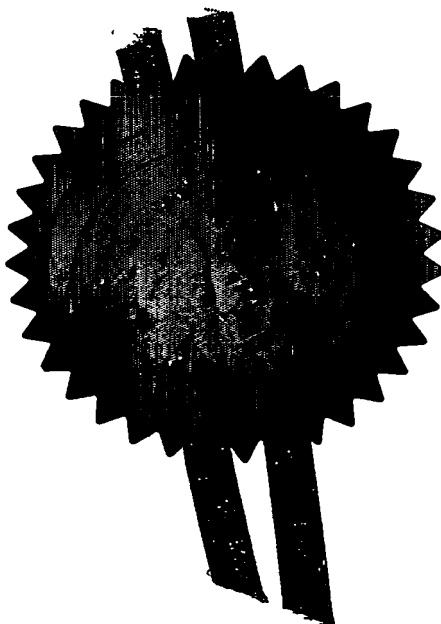
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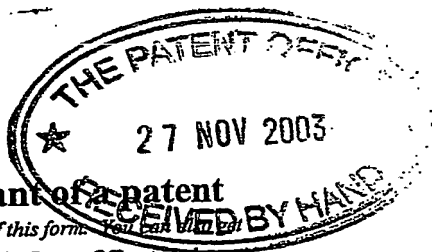
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KSW/38510

Patent application number

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27 NOV 2003

0327626.8

Full name, address and postcode of the or of  
each applicant (underline all surnames)

Autobar Group Limited  
41/42 Kew Bridge Road,  
Brentford, Middlesex TW8 ODY

Tetley G.B. Limited  
325 Oldfield Lane North,  
Greenford, Middlesex  
UB6 OAZ

Patents ADP number (if you know it)

680210001

876142600

If the applicant is a corporate body, give the  
country/state of its incorporation

United Kingdom

United Kingdom

Title of the invention

BEVERAGE CONTAINER

Name of your agent (if you have one)

"Address for service" in the United Kingdom  
to which all correspondence should be sent  
(including the postcode)

BARON & WARREN  
19 SOUTH END  
KENSINGTON  
LONDON  
W8 5BU

Patents ADP number (if you know it)

281001

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Claim(s) -

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Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

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11.

I/We request the grant of a patent on the basis of this application.

Signature

Date 27 November 2003

BARON & WARREN

Agents for the Applicant

12. Name and daytime telephone number of person to contact in the United Kingdom

K.S. WARREN

020 7937 0294

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## BEVERAGE CONTAINER

The present invention relates to a container which contains an ingredient for the preparation of a beverage or other liquid product and in which the ingredient can be mixed or infused with a liquid, such as water, to create the product. More particularly, the invention relates to a container in which a beverage, such as tea or coffee, can be brewed in a controlled fashion and which is disposable.

It is well known to supply disposable drinking cups containing a powdered or granulated beverage ingredient or teabag in the bottom of the cup in readiness for preparation of a beverage. Such disposable drinking cups are designed to be stacked in nested relation with one another, the ingredient being trapped in an ingredient chamber formed between one cup and the bottom of the next cup above in the stack. When the beverage is to be prepared, the cup is dispensed from the bottom of the stack and water and/or other liquid is added to the ingredient contained in the cup.

With such so-called "in cup" drinks, there is no effective control of the mixing or infusion of the liquid with the beverage ingredient in the cup, the liquid simply being added to the ingredient and left to mix or infuse with the ingredient, possibly, assisted by stirring of the resulting beverage. Moreover, it is desirable, for example, in the case of tea or coffee, to remove the teabag, tea leaves or coffee grounds from the cup before drinking the beverage, not only for the purposes of improving the quality of the drink, but also to avoid continued brewing of the beverage after it has attained the desired strength. Depending on circumstances, disposal of the waste ingredient may be environmentally unfriendly.

A controllable brewing device has been proposed which is in the form of a disposable plastics drinking cup has been proposed in International Application No PCT/IE03/00104. It comprises an outer cup having an inner cup dimensioned so as to fit or nest within the outer cup and so that it can turn relatively to the outer cup. In one embodiment, a discrete chamber containing tea or coffee is disposed between the bottoms of the two nested cups and the inner cup has perforations in its bottom wall which may be selectively moved into and out of alignment with perforations in the discrete chamber by rotating the inner cup, thereby to control flow of hot water

contained in the inner cup into and from the ingredients in the discrete chamber in order to produce a beverage in the inner cup. In other embodiments, specially shaped cavities are provided in upright wall portions of the outer cup, adjacent the bottom thereof, for cooperating with perforated upright wall portions of the inner cup. Ingredients are positioned in the cavities and liquid contained in the inner cup is mixed or infused with the ingredients to produce a beverage by rotation of the inner cup relatively to the outer cup so as selectively to admit and shut off flow of liquid from the inner cup to the ingredient cavities.

10 The above proposal enables the user to determine when the brewing process should start and when it should stop and permits brewing of the beverage to the strength desired by the drinker. Also, it avoids the need to remove loose tea leaves, coffee grounds or other solid ingredients from the cup, after brewing, and the need to dispose of the ingredients separately.

15 However, the proposal requires the use of either a discrete ingredient chamber or a spaced arrangement of the ingredient cavities which can create problems in loading the ingredients and assembling the brewing device.

An object of the present invention is to provide a container which enables a user to control the mixing or infusion of a liquid with an ingredient supplied with the container and which is easy to prefill with the ingredient and assemble with the ingredient in place.

20 To this end, the present invention consists in a container comprising an outer cup, an inner cup nested within the outer cup and turnable relative thereto, an ingredient chamber between the bottom walls of the inner and outer cups, one or more channels formed internally of the outer cup and communicating with the ingredient chamber, and one or more ports in the inner cup arranged to cooperate with the channels, whereby the cups can be turned relatively to one another selectively to admit or shut off flow of liquid between the inner cup and the ingredient chamber via the channel(s).

25 The invention enables the ingredient in the container to be mixed with liquid and/or other ingredients in the inner cup in a controlled fashion by selectively turning or twisting the inner cup relative to the outer cup in order either to allow liquid to flow into the ingredient chamber and to mix or infuse with the ingredient, or to shut off partially or entirely the flow of liquid to the

30

ingredient. For example, when the desired strength of beverage has been achieved, the inner cup is twisted to shut off flow of further liquid to the ingredient chamber so as to prevent further mixing or infusion of the contents of the inner cup with the remaining ingredient in the ingredient chamber.

- 5 When the ingredient chamber has been shut off, the remaining ingredients can no longer affect the strength or quality of the resulting beverage in the inner cup and, when the beverage has been drunk, the container is disposed of with any remaining ingredients or ingredient bags in the container.

10 An advantage of the invention is that the ingredient, either in a loose form or in a bag, is loaded into the bottom of the outer cup without the need to be contained in a discrete chamber, and the inner cup can be readily assembled with the outer cup when the ingredient is in place. Another advantage is that the structure of the container enables the inner and outer cups to be thermoformed from sheets plastics material as thin walled  
15 seamless products.

The inner and outer cups are desirably formed with cooperating locking means which interengages to retain the cups in nested relationship whilst enabling them to turn relatively to one another. This locking means is preferably formed on short skirts extending downwardly from the rims of the  
20 inner and outer cups about the outsides of the cups, and which snap into engagement when the cups are assembled in nested relation. For example, each skirt may be formed with a shallow annular groove on its outside surface so that when the inner cup is nested with the outer cup, the skirt of the outer cup resiliently engages over the outside surface of the inner cup  
25 skirt and the annular rib formed on the inside of the outer skirt by the annular groove of the outside snaps into engagement with the annular groove of the inner skirt as the rims contact one another. Such a skirt construction also enables an anti-splash lid to be fitted to the mouth of the container and to be snapped into engagement with the annular groove of the outer cup skirt.

30 Preferably, one or both of the bottom walls of the inner and outer cups are formed with protuberances which project into the ingredient chamber and which serve to squeeze and/or agitate an ingredient bag or loose ingredient contained in the ingredient chamber when the cups are turned relatively to

one another and liquid is admitted into the ingredient chamber. This feature enhances infusion or mixing of the ingredient in the chamber with the liquid.

In a preferred embodiment, the inner and outer cups are of circular cross-section and comprise bottom walls and sidewalls extending upwardly and generally outwardly from the bottom walls. The outer cup has arcuate recesses in the outside of its side wall extending upwardly from the bottom wall and terminating in arcuate shoulders on the inside of the outer cup. These outside recesses form channels therebetween on the inside of the outer cup for communicating with the ingredient chamber adjoining the bottom wall of the outer cup. When nested with the outer cup, the bottom wall of the inner cup seats on the internal arcuate shoulders of the outer cup and the bottom wall of the inner cup is formed with arcuate ports adjacent its side wall of smaller dimensions than the arcuate shoulders of the outer cup. Consequently, the inner cup can be twisted either to move its ports into communication with the channels, whereupon liquid can flow from the inner cup into the ingredient chamber between the bottom walls of the two cups or, alternatively, may be twisted into a position where its ports are positioned on the arcuate shoulders, and closed thereby, so as to shut off flow of liquid to the ingredient chamber.

The outer cup may be formed with an array of external ribs which facilitate gripping of the container by a user. They enable the container to be more comfortably held when the content is a hot beverage and this is further enhanced by the insulating characteristics inherent in the double walled construction of the container.

In order that the present invention may be more readily understood, reference will now be made to the accompanying drawings, in which:-

Figure 1 is a perspective view, from the bottom, of one embodiment of the present invention which is a disposable drinking cup,

Figure 2 is a perspective view, from the top, of the container of Figure 1,

Figure 3 is an axial section taken along the plane III-III of Figure 1,

Figure 4 is an axial section taken along the plane IV-IV of Figure 1,

Figure 5 is an enlarged fragmentary section of the rim part of the container, as ringed in Figure 4,

Figure 6 is a perspective view, from the top, of the outer cup of the container,

Figure 7 is an axial section taken along the plane VII-VII of Figure 6, and

5 Figure 8 is an axial section taken along the plane VIII-VIII of Figure 6

Figure 9 is a perspective view, from the bottom, of the inner cup, and

Figure 10 is an axial section of the inner cup.

Referring to Figures 1 to 5 of the accompanying drawings, the disposable drinking cup 1 comprises an outer cup member 2 and an inner cup member 3 coaxially nested within the outer cup member. These cup members or cups are preferably thermoformed from sheet plastics material as thin walled seamless mouldings. They are locked in interengaged relationship, but so as to be turnable relatively to one another, by an interengaging skirt structure 4 about the mouth 5 of the drinking cup. The bottoms of the nested cups are spaced apart and define an ingredient chamber 6 therebetween for containing a beverage ingredient capable of mixing with hot or cold water to produce the beverage. For example, the beverage ingredient may be tea in a conventional teabag, loose leaf tea or coffee grounds. As is more fully explained below, two channels 7 are formed internally of the outer cup 2 and communicate with the ingredient chamber 6 and two ports 8 formed in the inner cup 3 are arranged to cooperate with the channels 7. The inner and outer cups can be turned relatively to one another so as selectively to admit or shut off flow of liquid to the ingredient chamber via the ports and the channels.

25 As illustrated in Figures 6 to 8, the outer cup 2 is of circular shape in plan and comprises a bottom wall 9 and a side wall 10 extending upwardly and generally outwardly from the bottom wall 9 to a mouth 11 at its top end. Extending downwardly about the outside of the outer cup, from a rim 12 about the mouth, is a short skirt 13 which is formed on its outside, at its lower end, with a shallow annular groove 14 of arcuate section and an outwardly projecting lip 15. These form one component of the interengaging skirt structure 4. Moulded in the side wall 10 of the outer cup member 2 in an annular zone below the skirt is an array of hollow ribs 16 which serve to strengthen the sidewall and as a gripping zone where the outer cup may be



conveniently gripped by the fingers of a user. A narrow annular strengthening shoulder 17 is also moulded in the sidewall 10 just above the array of ribs.

Two diametrically opposed arcuate recesses 18 are moulded in the  
 5 outside of the sidewall 10 of the outer cup at the bottom of the cup and extend upwardly from the bottom wall 9 for substantially the height of the ingredient chamber 6. They terminate in arcuate shoulders 19 on the inside of the outer cup. The arcuate spaces on the inside of the outer cup member between the axial ends of the outside recesses 18 define the internal  
 10 channels 7 of the outer cup 2 which communicate with the ingredient chamber 6 in order to permit flow of liquid into the ingredient chamber from the inner cup 3. The arcuate shoulders 14 and channels 7 subtend substantially equal angles at the centre of the outer cup.

On its inside, the bottom wall 9 of the outer cup 2 is moulded with a  
 15 symmetrical array of hollow bulges 20 for the purposes of squeezing or agitating the ingredient in the ingredient chamber 6 as will be more fully explained below.

Figures 9 to 10 illustrate the inner cup 3 which, similar to the outer cup 2, is of circular shape in plan and comprises a bottom wall 21 and a sidewall  
 20 22 extending upwardly and generally outwardly from the bottom wall to a mouth 23 at the top. Extending downwardly from the rim 24 of the mouth about the outside of the inner cup 3 is a short skirt 25 which, on its inside is of complementary shape to the skirt 13 of the outer cup 2 and which comprises a shallow annular arcuate groove at its lower end forming an inwardly  
 25 projecting annular rib 26 for engaging the annular groove 14 of the skirt 13 of the outer cup and terminates in an outwardly projecting radial lip 27.

At its bottom wall 21, the inner cup 3 is moulded on its outside with a central hollow circular boss portion 28 having a diameter substantially corresponding to the inner diameter of the internal shoulders 19 of the outer  
 30 cup. The boss portion is surrounded by an annular peripheral portion 29 of the bottom wall 21 of the inner cup 3 and the two ports 8 are formed at diametrically opposite positions in this peripheral portion for cooperating with the channel spaces 7 in the outer cup and for permitting liquid to flow from the inner cup to the ingredient chamber 6 via the channels 7. The ports 8 are

slightly shorter in length and width than the shoulders 19 of the outer cup so that when disposed on the shoulders, the latter shut off the ports. Two small hollow radial ribs 30 are moulded on the outside of the peripheral portion 29 adjacent the same ends of the ports 8 in one direction of rotation of the inner cup 3 and serve as stops for abutting the ends of the shoulders 19 of the outer cup 2 so as to limit relative turning movement of the cups.

On its outside, the central boss portion 28 is moulded with a symmetrical array of bulges 31 substantially corresponding to the array on the inside of the bottom wall 9 of the outer cup 2 and which cooperate with the latter to enhance squeezing or agitation of the ingredient in the ingredient chamber.

On its outside, the sidewall 22 of the inner cup 3 is moulded with narrow annular shoulders 32 at positions corresponding to the top internal shoulder 17 of the outer cup 2 and the top and bottom ends of the finger gripping zone. These shoulders 32 serve to strengthen the sidewall 22 of the inner cup 3 as well as providing further areas for supporting the inner cup member within the outer cup 2.

The inner cup 3 is designed to fit snugly within the outer cup 2 when the cups 2,3 are disposed in nested relation. When nested, as shown in Figures 1-5, the central boss portion 28 of the inner cup 3 rotationally fits between the shoulders 19 of the outer cup 2 and serves to centralise the inner cup within the outer cup. The peripheral bottom portion 29 of the inner cup 3 seats on the arcuate shoulders 19. Further support is supplied by the narrow shoulders 17,32 formed in the sidewalls 10,22 of the cups 2,3. At the mouth 5 of the drinking cup, the skirt 25 of the inner cup 3 fits outside the skirt 13 of the outer cup 2 and its inside rib 26 snaps into engagement with the outside groove 14 of the outer cup owing to the resiliency of the skirts as the cups are moved into the fully nested position (see Figure 5). In this position, the skirts 13,25 are in mutual contact downwardly from the rims 12,24 and the radial lip 27 of the skirt 25 of the inner cup 3 member seats on the radial lip 15 of the outer cup member 2.

In use, an ingredient, such as a conventional circular teabag, is loaded into the bottom of the outer cup 2 prior to assembly of the two cups 2,3 as described above. The ingredient chamber 6 is larger than is necessary to

contain the teabag or other predetermined quantity of beverage ingredient in order to allow for expansion of the ingredient when liquid is added, and the positioning of the ingredient in the bottom of the outer cup 2 before assembly does not obstruct subsequent assembly of the two cups.

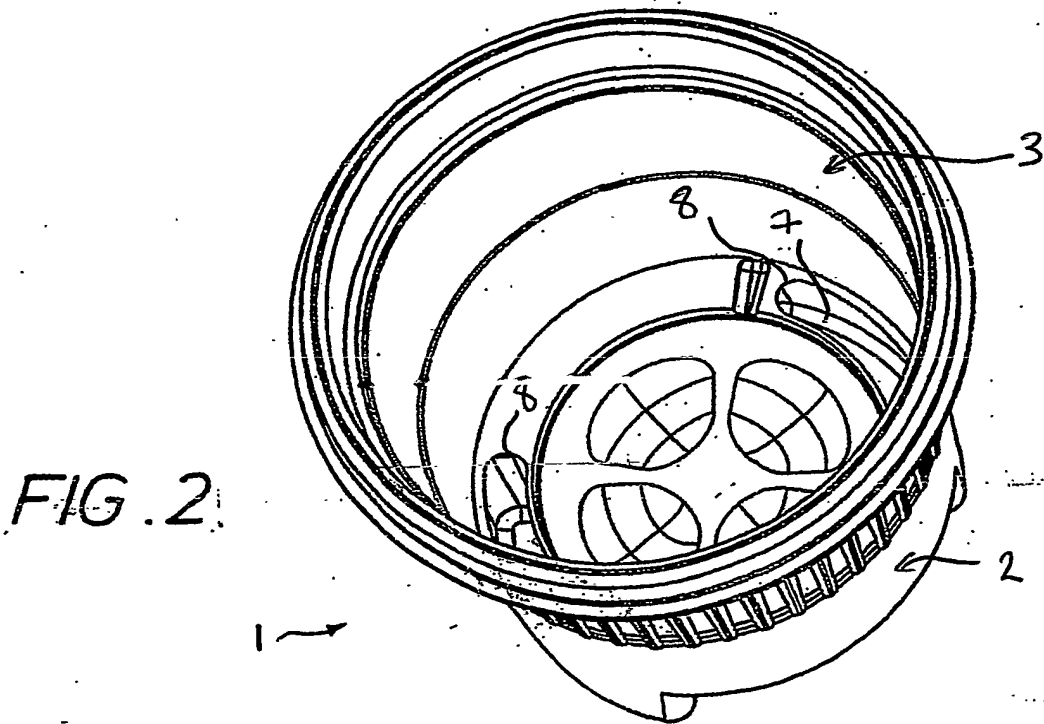
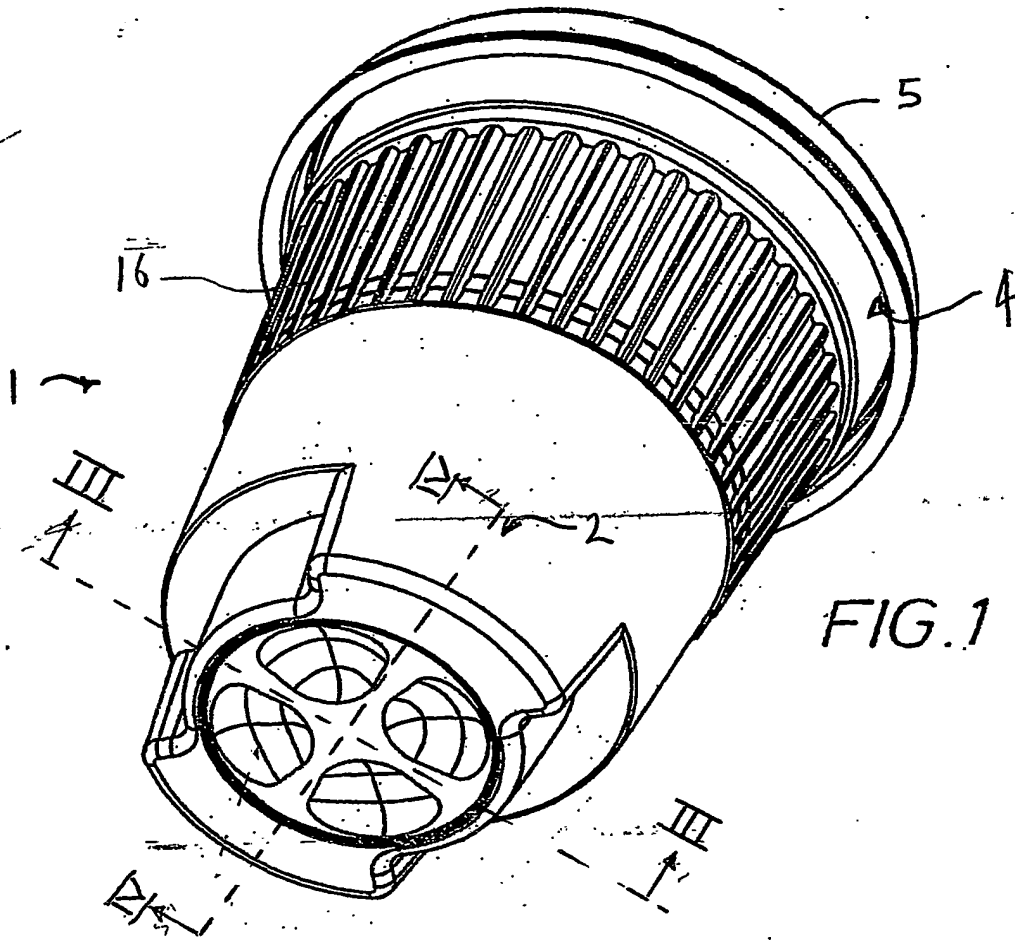
5           When preparing a beverage from an ingredient, for example, a teabag, trapped in the ingredient chamber 6, the inner cup 3 is firstly turned relatively to the outer cup 2 so that the ports 8 are shut off by the shoulders 19 of the outer cup. Hot water is then added to the inner cup 3 and the latter is turned relatively to the outer cup 2 by gripping the ribbed zone 16 of the outer cup  
10           and the skirt 25 of the inner cup. The inner cup can only be turned in one direction relatively to the outer cup, as dictated by the stop ribs 30. It is turned in the one direction to align the ports 8 with the channels 7 and until the stop ribs 30 abut the adjacent ends of the opposite shoulders 19, whereupon hot water flows through the ports and the channels into the  
15           ingredient chamber 6. The teabag in the chamber expands on contact with the hot water and, thereafter, the inner cup 3 may be turned in the opposite direction relatively to the outer cup 2, and then backwards and forwards relatively to the outer cup in order to squeeze and agitate the teabag between the bulges 31, 20 on the bottoms of the cups and thereby enhance infusion of  
20           the hot water with the teabag and accelerate the brewing process. The resulting tea drink produced flows from the ingredient chamber 6 back into the inner cup 3 via the channels 7 and ports 8 and, when a brew of the desired strength has been produced, the inner cup is turned in order to restore it to the initial position in which the stop ribs 30 abut the shoulders 19  
25           and the flow of liquid through the ports is shut off by the shoulders. Thereafter, milk and sugar may be added to the tea in the inner cup, if required, in order to complete the drink.

          The cups 2, 3 can be twisted relatively to one another selectively to permit and shut off flow of hot water between the inner cup 3 and the  
30           ingredient chamber 6 until the desired strength of drink has been produced, thereby enabling the infusion of the teabag with hot water to be effectively controlled without the need to remove the teabag from the container or add further ingredients or water to the inner cup after initial infusion. If adequate ingredient is loaded into the ingredient chamber 6 when the cup is initially

assembled, there may be sufficient ingredient to allow the preparation of more than one satisfactory drink. When the first drink has been consumed, more liquid may be added to the inner cup member 3 which is again turned to open the ports 8 to enable the next charge of liquid to mix or infuse with the ingredient remaining in the ingredient chamber 6 and thereby produce a second drink, the inner cup 3 being turned relative to the outer cup 2 to shut off the ports 8 when the second drink has acquired the desired strength.

The drinking cup is gripped by a user at the ribbed zone and the ribs 16 serve to insulate the user's fingers from the hot drink in the drinking cup. The insulation is enhanced by the double walled structure provided by the assembled inner and outer cup members 2,3. An anti-splash lid may be fitted to the drinking cup by simply snapping the lid into engagement with the shallow annular groove 26 on the outside of the interlocking skirt structure. Finally, when the disposable drinking cup has been used, any remaining ingredients in the ingredient chamber 6 are automatically disposed of with the drinking cup.

Whilst a particular embodiment has been described, it will be understood that modifications can be made without departing from the scope of the invention.



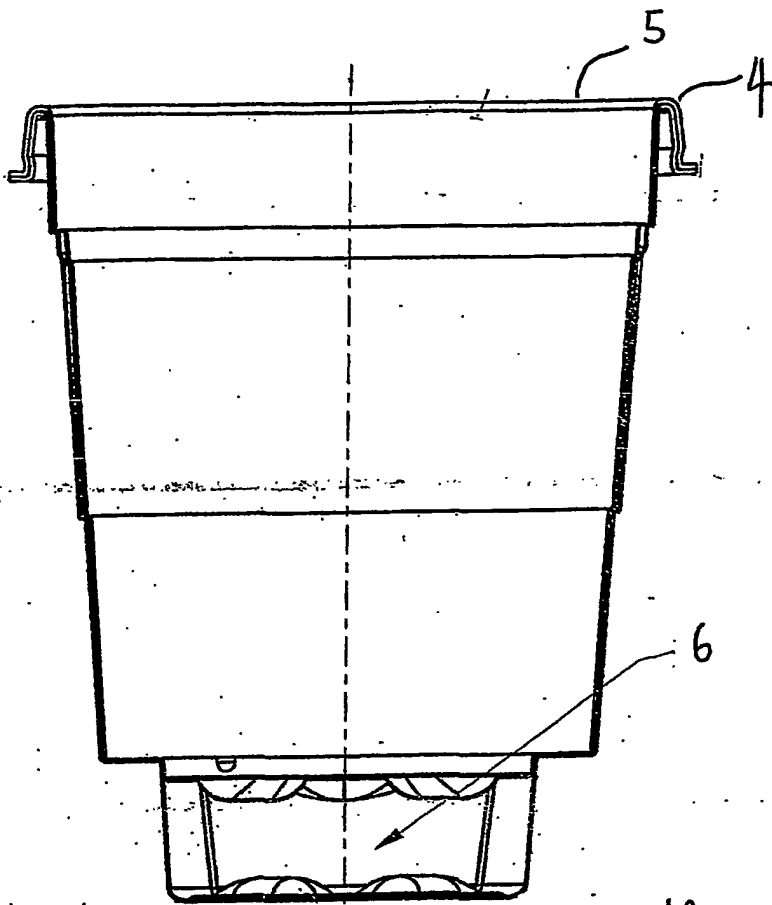
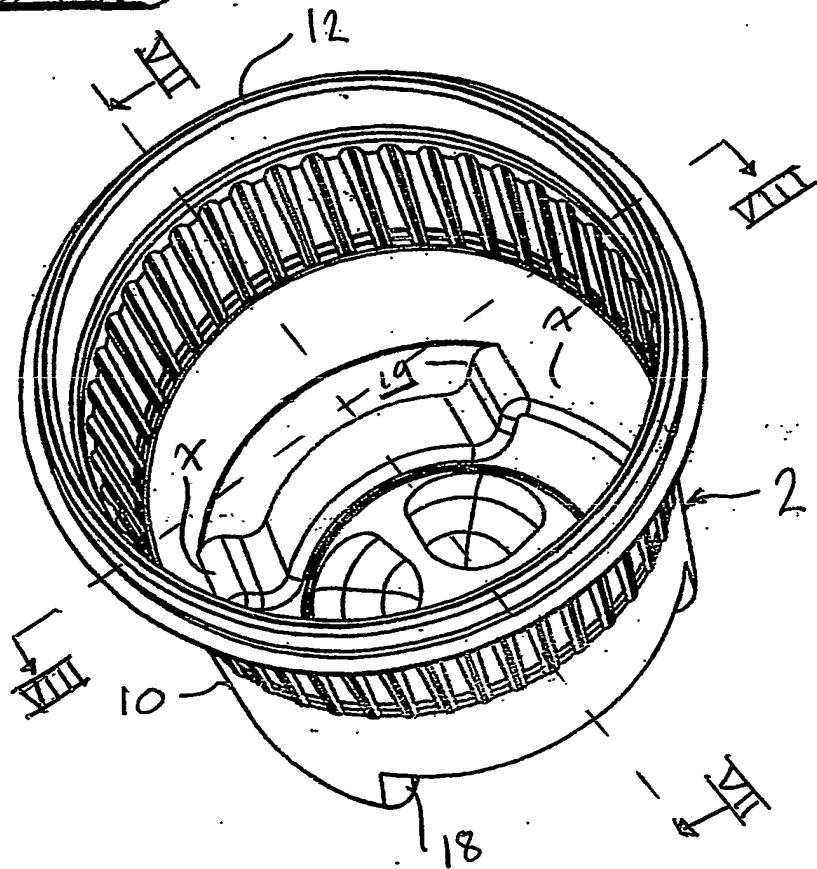


FIG. 3

FIG. 6



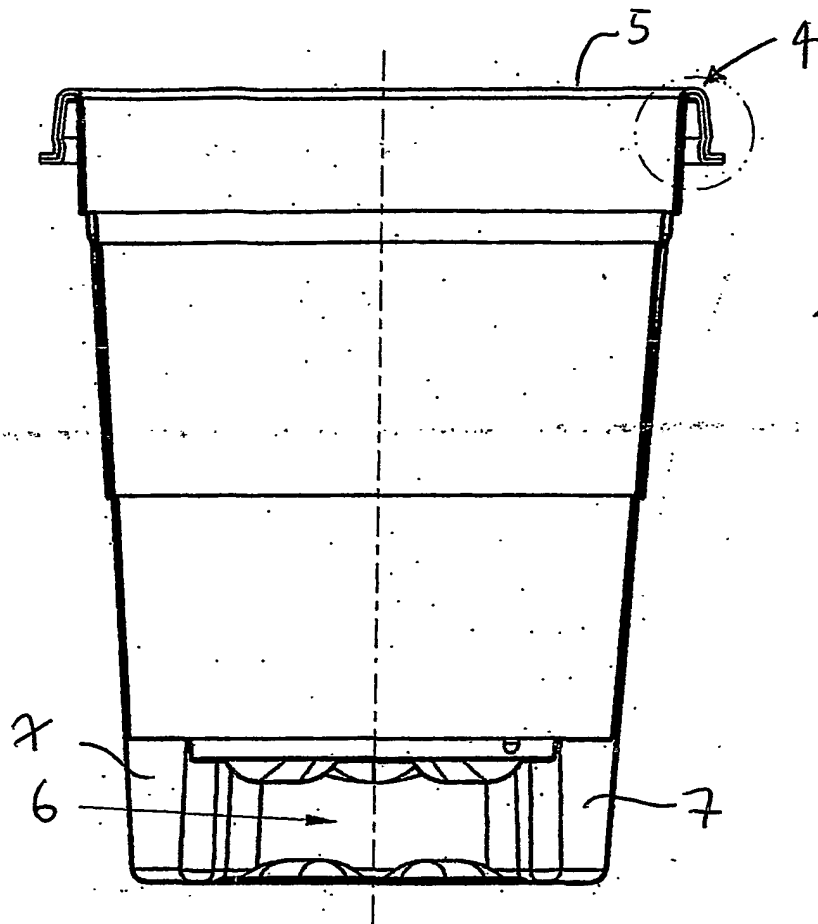


FIG. 4

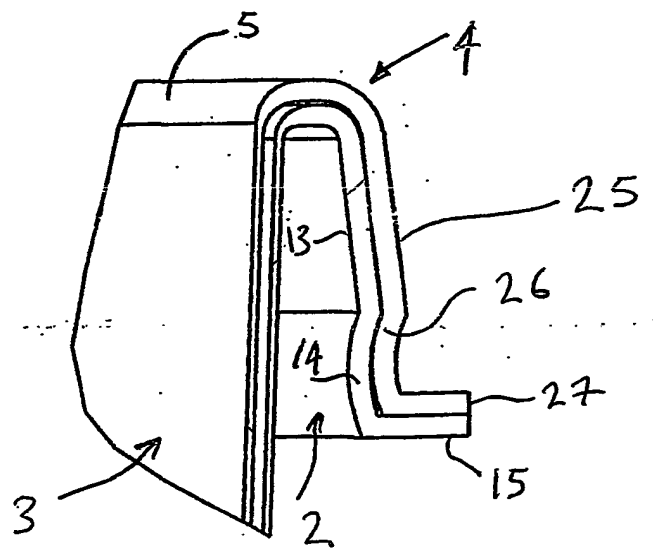
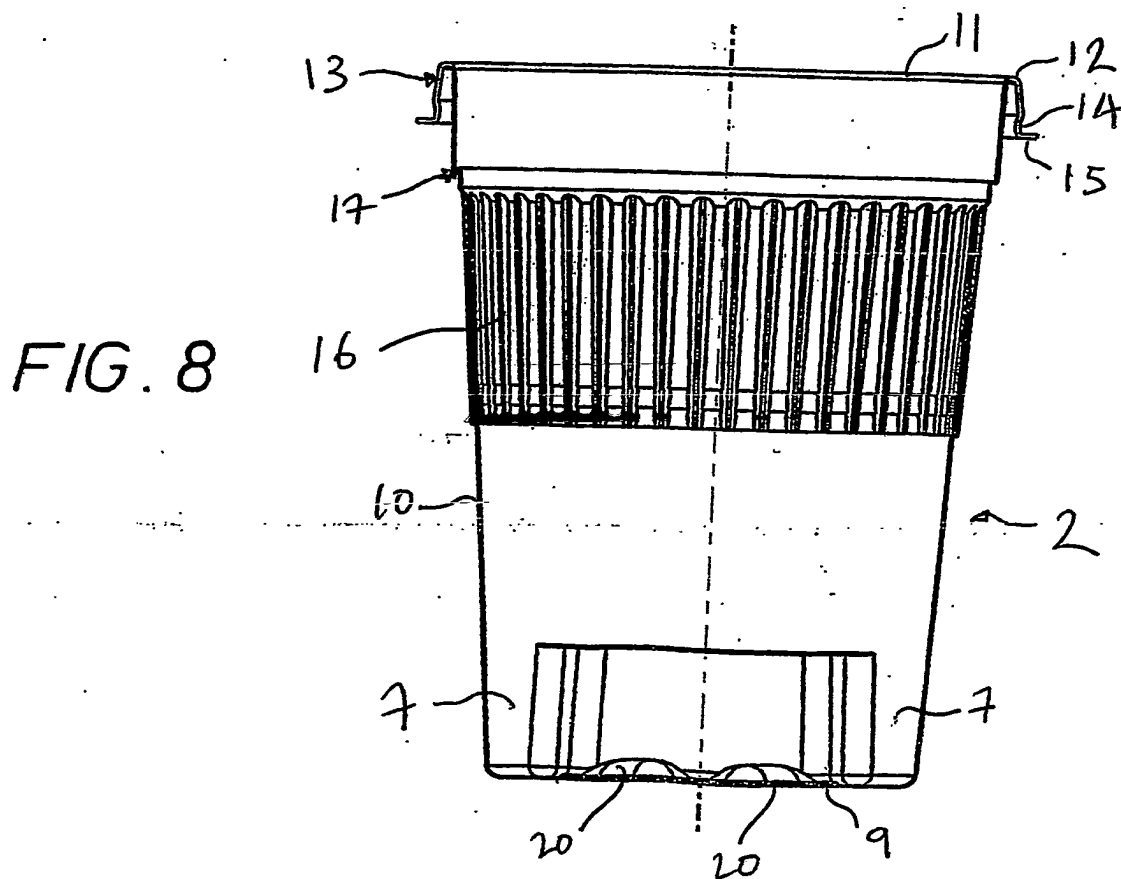
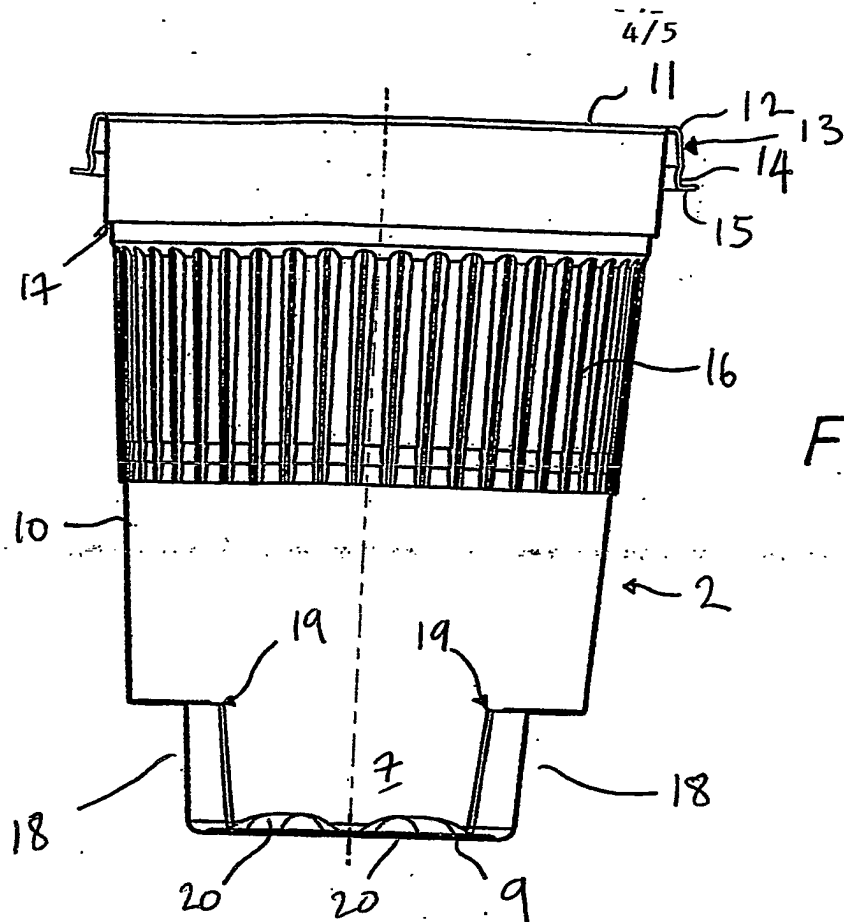


FIG. 5





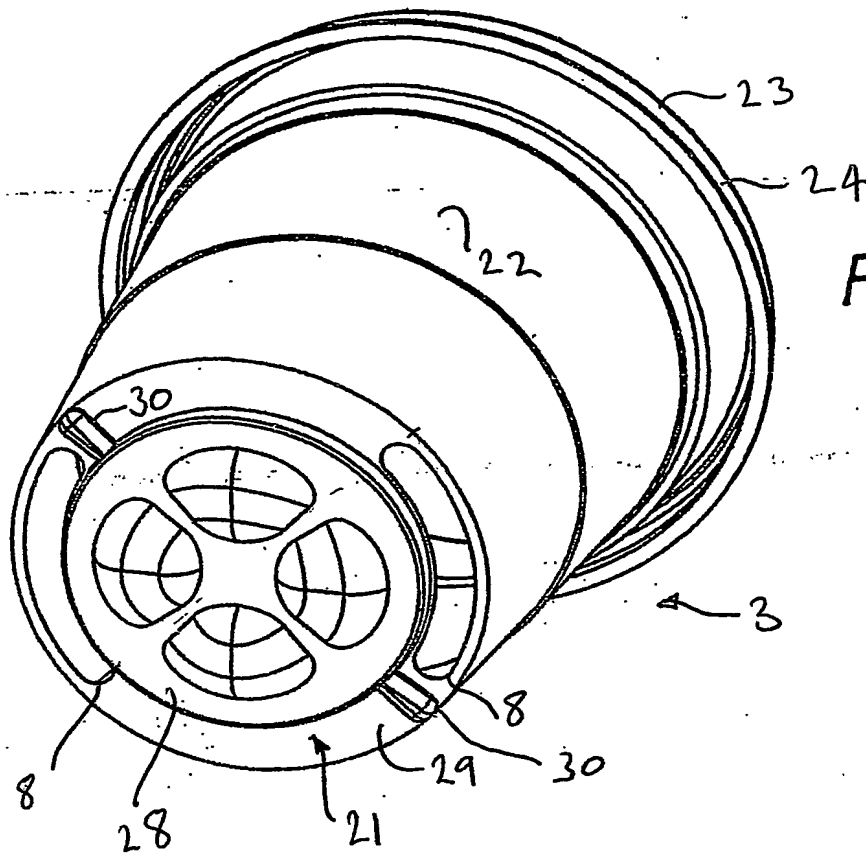
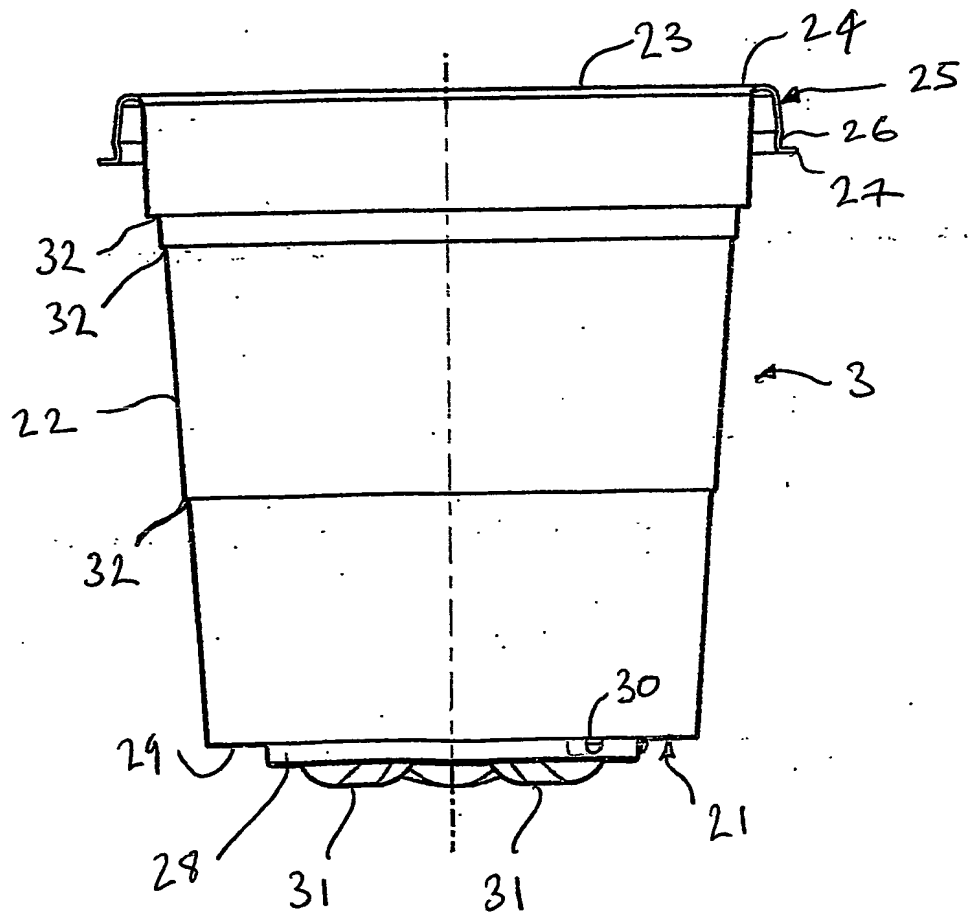


FIG. 9

FIG. 10



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